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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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.10/520,292

12/02/2005

William Davey

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535 7590 01/30/2008  
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EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

01/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/520,292

Applicant(s)

DAVEY ET AL.

Examiner

William C. Doerrler

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____                                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____   | 6) <input type="checkbox"/> Other: ____                           |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The string of expansion vessels and their relation to each other is never clearly claimed. This leads to multiple clarity problems including in claim 1, a lack of clear antecedent basis for "the expansion vessel C" in part a), and "the liquid/gas separator D in part c). In claim 3, in the phrase "downstream to it", it is unclear what it is referring to. In claim 4, "the first expansion vessel A" and "the expansion vessel B" lack clear antecedent basis, as does "the second expansion vessel B" in claim 5. The second expansion vessel B is also unclear as to whether it is the second expansion vessel in the string, or there are 2 expansion vessel Bs. In claim 6, "the upstream absorber" lacks clear antecedent basis. Also in claim 6, it is unclear if "a line (1) going to the heat exchanger E" is the same line claimed in claim 1, or if there are two lines. In line 6 of claim 6, "heated up there to the liquid/gas separator" is confusing. Claims 8-14 are process claims that depend from system claim 1, it is unclear if a system or a process is

intended to be claimed, as claim 8 begins "The process", which lacks antecedent basis. Claim 8 claims "a multiplicity of sequentially arranged expansion vessels", it is unclear if this is referring to the expansion vessels already claimed in claim 1, or if new expansion vessels are being claimed. The following lack clear antecedent basis; "the expansion vessels A,B and C" in claim 9, "the expansion vessel A" in claim 10, "the second expansion vessel B" and the third expansion vessel C" in claim 11, "the third expansion vessel C" and "the pressure of about 2.7 bar" in claim 12, and "the upstream absorber" and "the liquid/gas absorber D" in claim 13. In claim 14 "is obtained to the process" is confusing. In claim 14, it is noted that the stream being further purified with carbon dioxide rich fractions is not required to meet the claimed process steps, as this is claimed as "preferably" being present. The claims not expressly mentioned above depend from claim 1, so they are unclear due to their dependency.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,2, and 4-13, as best interpreted in light of the above clarity problems, are rejected under 35 U.S.C. 103(a) as being unpatentable over Markbreiter et al (4,252,548).

Markbreiter et al discloses applicants' basic inventive concept, a system for separating carbon dioxide from methanol using a first expansion vessel 29 which feed the lower end of heat exchanger 33 with the heated stream entering a separator 35. Markbreiter et al do not state the height differences between components. However head pressure differences due to elevation differences are well known in the fluid handling art and as such applicant is seen merely to quantify what would have been ordinarily performed in the design process. In regard to claim 4, the use of hydrogen and carbon dioxide is seen as intended use, which the separation system of Markbreiter et al is clearly capable of performing. It is noted that line 17 goes to heat exchanger 14 and line 18 goes to separator 19. In regard to claim 5, line 23 leads to component 29, while line 21 leads to heat exchanger 14. In claims 8-13, the claimed temperatures and pressures are seen as matters of ordinary design choice for an ordinary practitioner in the art to derive the most efficient system from the teaching of Markbreiter et al. Markbreiter further shows separators 11,16 and 19 and heat exchanger 14, which are all located upstream of expansion vessel 29. It is noted that claim 9 doesn't really claim anything.

The claim is claiming that pumps may or may not be used, with no real additional structure.

Claims 3 and 14, as best interpreted, are rejected under 35 U.S.C. 103(a) as being unpatentable over Markbreiter et al '548 in view of the German patent to Ranke (3,902,276) cited in the PCT.

Markbreiter et al disclose applicants' basic inventive concept, a separation system for separating carbon dioxide from methanol which uses multiple separation stages at descending pressure, substantially as claimed with the exception of using a downstream regenerator. Ranke shows this feature to be old in the carbon dioxide/methanol separator art with regenerator 10 being downstream from separation vessels 6 and 8. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of the Ranke German patent to modify the carbon dioxide/methanol separation system of Markbreiter by using a downstream regenerator to further purify the methanol before it is returned to the natural gas purifying sorption column.

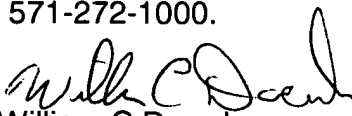
### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Markbreiter et al '393 and Apffel show carbon dioxide/methanol sorbing systems. Mehra shows a series a separator at decreasing pressure and elevation. Carter shows multi-stage expansion separation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
William C Doerrler  
Primary Examiner  
Art Unit 3744

WCD